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SHARP 20MR10M SERVICE MANUAL

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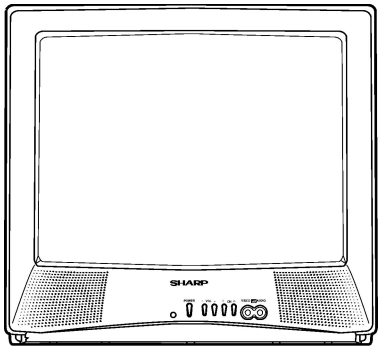
SHARP SERVICE MANUAL



COLOR TELEVISION

Chassis No. CD-A

MODELS 20MR10M

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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ELECTRICAL SPECIFICATIONS

POWER INPUT ..... 120 V AC 60 Hz

POWER RATING ..... 69 W

PICTURE SIZE ..... 1,194cm$_2$ (185sq inch)

CONVERGENCE ..... Magnetic

SWEEP DEFLECTION ..... Magnetic

FOCUS ..... Hi-Bi-Potential Electrostatic

INTERMEDIATE FREQUENCIES

- Picture IF Carrier Frequency ..... 45.75 MHz
- Sound IF Carrier Frequency ..... 41.25 MHz
- Color Sub-Carrier Frequency ..... 42.17 MHz (Nominal)

AUDIO POWER

- OUTPUT RATING ..... 1.0 W (at 10% distortion)

SPEAKER

- SIZE ..... 8 cm (Round)
- VOICE COIL IMPEDANCE ..... 8 ohm at 400 Hz

ANTENNA INPUT IMPEDANCE

- VHF/UHF ..... 75 ohm Unbalanced

TUNING RANGES

- VHF-Channels ..... 2 thru 13
- UHF-Channels ..... 14 thru 69
- CATV Channels ..... 1 thru 125 (EIA, Channel Plan U.S.A.)

Specifications are subject to change without prior notice.

SHARP CORPORATION

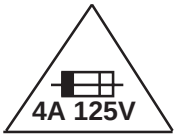
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ **Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:**

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value -no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When troubleshooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

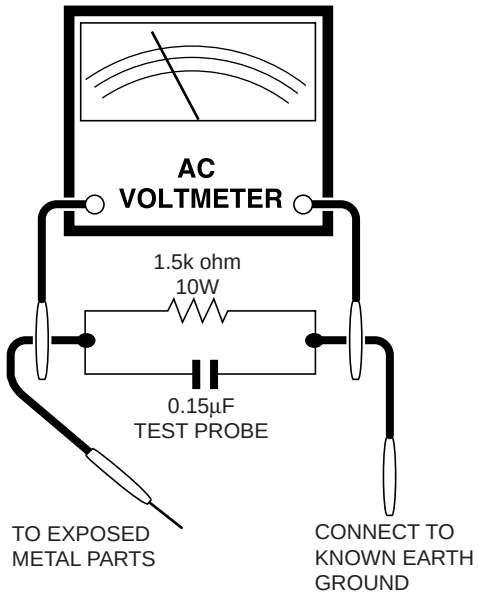
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators and etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15mF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon and etc.) and measure the AC voltage drop across the resistor.
  AII checks must be repeated with the AC ine cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



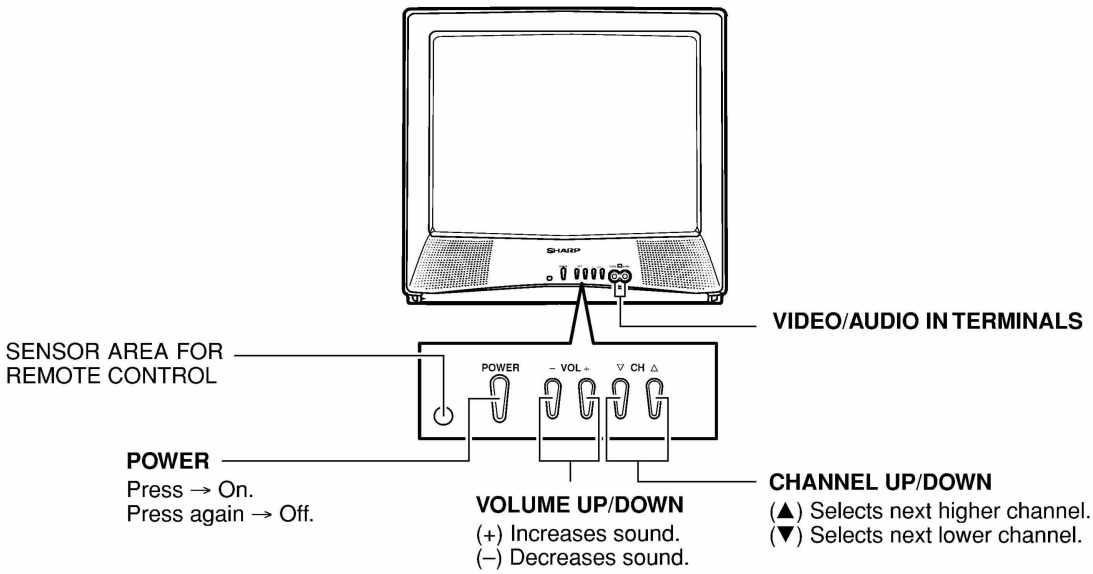
SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage and etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

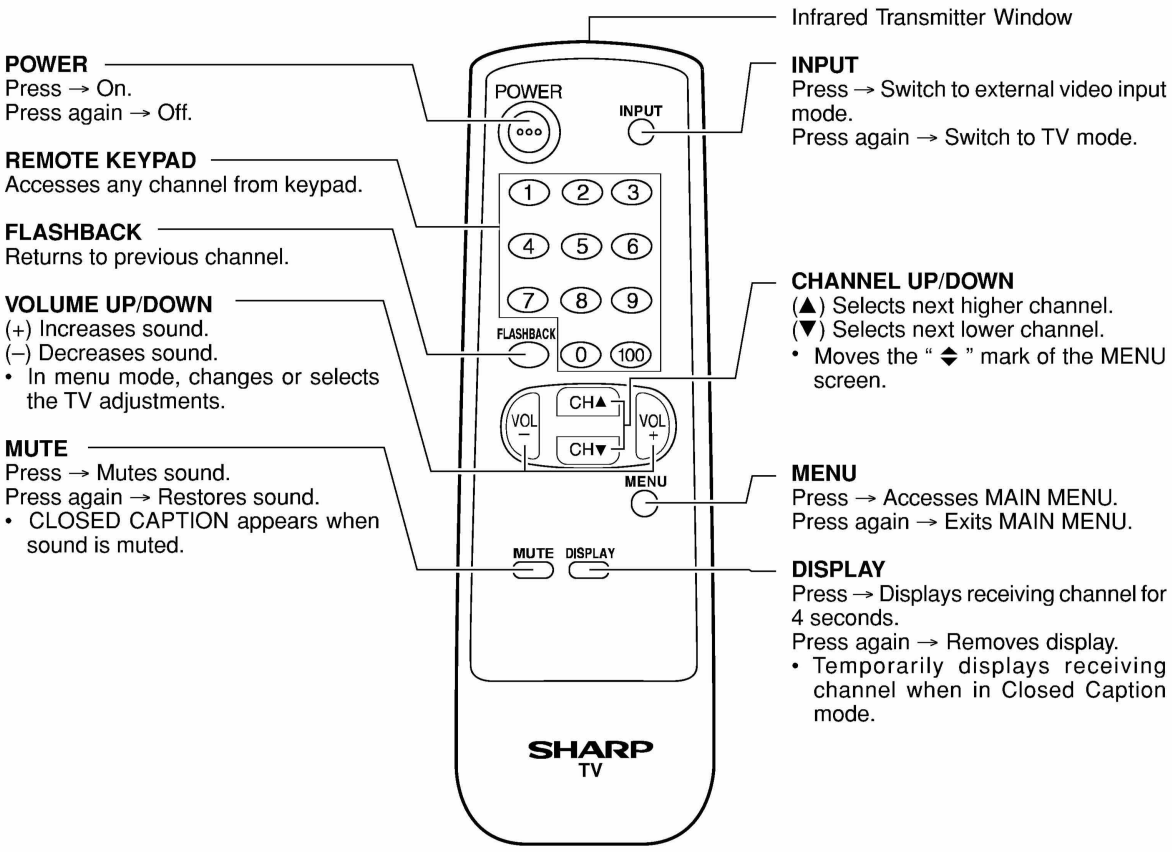
For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

LOCATION OF USER'S CONTROL

Front Panel



Basic Remote Control Functions



INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, +B system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1) Apply 120V AC using a variac transformer for accurate input voltage.
2) Allow for warm up and adjust all customer controls for normal picture and sound.
3) Receive a good local channel.
4) Connect a digital voltmeter to TP653 and make sure that the voltmeter reads 21.3 ±1.5 V.
5) Apply external 28.9V DC at TP653 by using an external DC supply, TV must be shut off.
6) To reset the protector, unplug the AC cord and make a short circuit between TP651 and TP652. Now make sure that normal picture appears on the screen.
7) If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and select the service adjustment "S19" and Bus data "01" (Y-mute on).
4. The voltage should be approximately, 26.0kV (at zero beam).
   If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

For adjustments of this model, the bus data is converted to various analog signals by the D/A converter circuit.

Note: There are still a few analog adjustments in this series such as focus and master screen voltage. Follow the steps below whenever the service adjustment is required. See "Table-B" to determine, if service adjustments are required.

1. Service mode

Before putting unit into the service mode, check that customer adjustments are in the normal mode. Use the reset function in the video adjustment menu to ensure customer controls are in their proper (reset) position.

2. Service number selection

Once in the service mode, press the Ch-up or Ch-down button on the remote controller or at the set. The service adjustment number will vary in increments of one, from "S01" to "OP". Select the item you wish to adjust.

3. Data number selection

Press the Vol-up or down button to adjust the data number.

To enter the service mode and exit service mode.

While pressing the Vol-up and Ch-up buttons at the sametime, plug the AC cord into a wall socket.
Now the TV set is switched on and enters the service mode.
To exit the service mode, turn the television off by pressing the power button.

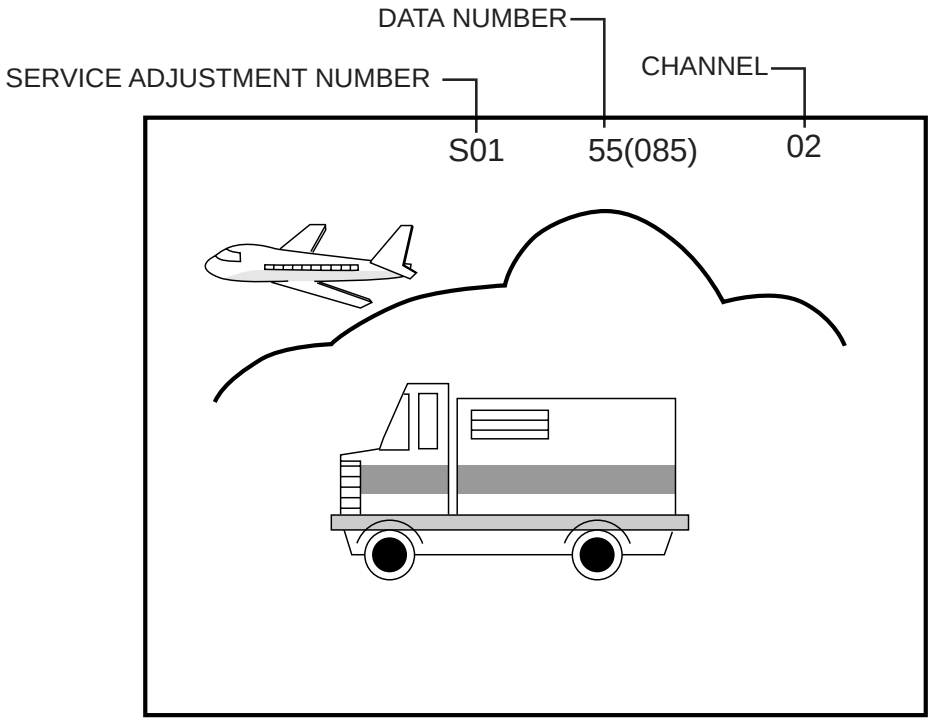
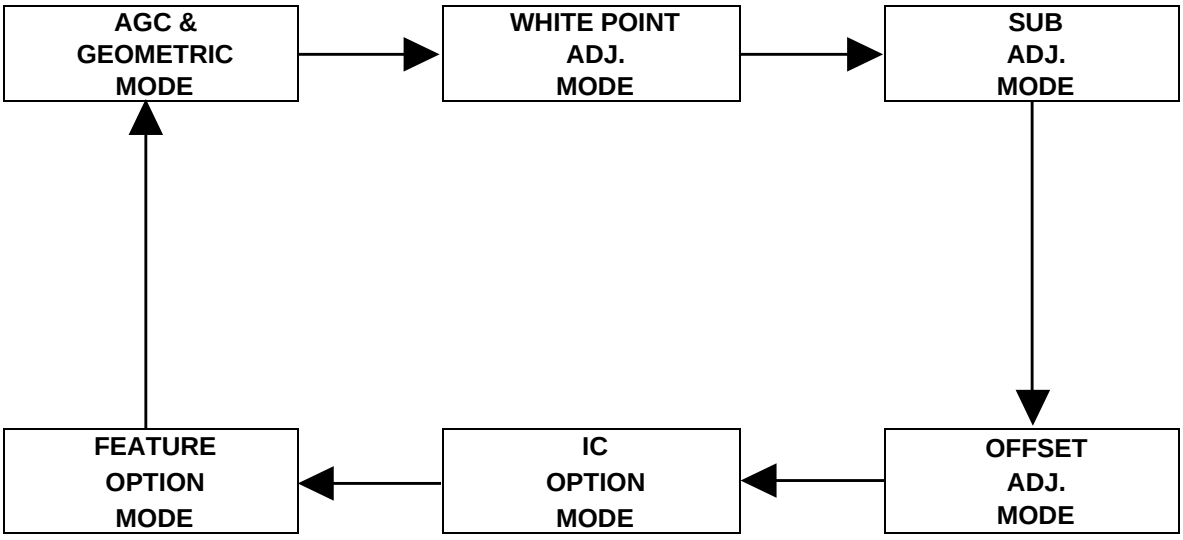


Figure A.

■SERVICE MODE

(1) In the Service Mode, Key is used to select the mode in the following oreder.



AGC & GEOMETRIC MODE

↓
AGC TAKE OVER POINT (AGC)
↓
VERTICAL SLOPE (V-LIN)
↓
VERTICAL AMP (V-AMP)
↓
VERTICAL SHIFT (V-CENT)
↓
VERTICAL ZOOM (V-ZOOM)
↓
HORIZONTAL SHIFT (H-CENT)
↓
EAST-WEST WIDTH (H-SIZE)
↓
HORIZONTAL PARALLELOGRAM (EW//)
↓
EAST-WEST PARABOLA / WIDTH (PARA)
↓
EAST-WEST UPPER CORNER PARABOLA (COR(U))
↓
EAST-WEST LOWER CORNER PARABOLA (COR(L))
↓
EAST-WEST TRAPEZIUM (TRAPE)
↓
HORIZONTAL BOW (HB)
↓
S-CORRECTION (S-COR)

WHITE POINT ADJ. MODE

↓
W.P. RED OFFSET HIGH / OFFSET BLUE TONE (DRI-R-HI)
↓
W.P. GREEN OFFSET HIGH / OFFSET BLUE TONE (DRI-G-HI)
↓
W.P.BLUE OFFSET HIGH / OFFSET BLUE TONE (DRI-B-HI)
↓
W.P. RED MH / STD (DRI-R-MH)
↓
W.P. GREEN MH / STD (DRI-G-MH)
↓
W.P. BLUE MH / STD (DRI-B-MH)
↓
W.P. RED OFFSET ML / OFFSET RED TONE (DRI-R-ML)
↓
W.P. GREEN OFFSET ML / OFFSET RED TONE (DRI-G-ML)
↓
W.P. BLUE OFFSET ML / OFFSET RED TONE (DRI-B-ML)
↓
W.P. RED OFFSET LOW (DRI-R-LO)
↓
W.P. GREEN OFFSET LOW (DRI-G-LO)
↓
W.P. BLUE OFFSET LOW (DRI-B-LO)

SUB ADJ. MODE

↓
MAX VOLUME (SUB-VOL)
↓
SUB CONTRAST (SUB-CON)
↓
SUB TINT (SUB-TINT)
↓
SUB COLOUR (SUB-COL)
↓
SUB BRIGHTNESS (SUB-BRI)
↓
SUB SHARPNESS (SUB-SHP)
↓
MAX HOTEL VOLUME (HTL-VOL)
↓
HOTEL PROGRAM NO(HTL-PRG)
↓
BLUE BACK CONTRAST (BB-CON)
↓
OSD GRB REFERENCE (RGB)
↓
BLACK LEVEL OFFSET R(CUT-R)
↓
BLACK LEVEL OFFSET G(CUT-G)
↓
CATHODE DRIVE LEVEL(CDL)

OFFSET ADJ. MODE

↓ Y-D TIME (TV) [YD] (DL-TV)
↓ Y-D TIME (AV) [YD] (DL-AV)
↓ INITIAL/DEFAULT LANGUAGE (INIT)
↓ FAO-MAX VOLUME (FAO-VOL)
↓ ENERGY SAVE OFFSET (ESV_OFFS)
↓ CLOSE CAPTION POSITION (CCPOS)

IC OPTION MODE

↓ VERTICAL SCAN DISABLE (VSD)
↓ BLACK STRETCH (BKS)
↓ AUTOMATIC VOLUME LEVELLING (AVL)
↓ FAST FILTER IF-PLL (FFI)
↓ ENABLE VERTICAL GUARD (EVG)
↓ EHT TRACKING MODE (EHT)
↓ OVERSCAN SWITCH OFF (OSO)
↓ AUTO COLOUR LIMIT (ACL)
↓ FORCED COLOUR-ON (FCO)
↓ VIDEO MUTE AT IDENT LOSS (VMI)
↓ VIDEO MUTE AT PROGRAM/SOURCE CHANGE (VMC)
↓ HOTEL MODE (HTL)
↓ GAIN FM DEMODULATOR (BTSC)
↓ CHARGE PUMP (CP)
↓ FM WINDOW SELECTION (FMWS)
↓ SOUND MUTE BIT 0 (SM0)
↓ SOUND MUTE BIT 1 (SM1)
↓ IF AGC SPEED BIT 0 (AGC0)
↓ IF AGC SPEED BIT 1 (AGC1)
↓ PHI 1 TIME CONSTANT FOR FE (FOA-FE)
↓ PHI 1 TIME CONSTANT FOR FE (FOB-FE)
↓ PHI 1 TIME CONSTANT FOR AV (FOA-AV)
↓ PHI 1 TIME CONSTANT FOR AV (FOB-AV)
↓ FORCED SLICING LEVEL FOR VERTICAL SYNC.(FSL)
↓ SYNCHRONISATION OF OSD/TEXT DISPLAY (HP2)
↓ RGB BLANK (RGBL)

FEATURE OPTION MODE

↓ V-CHIP (V-CHIP)
↓ DEMO MODE (DEMO)
↓ REAL TIME CLOCK / ON TIMER (CLOCK)
↓ ENERGY SAVE (E-SAVE)
↓ PERSONAL PREFERENCE PROGRAM (P_PREF)
↓ UNIVERSAL PLUS (UNIV+)
↓ SPEAKER ON/OFF (SPEAKER)
↓ FIXED AUDIO OUT (FAO)
↓ VIEW TIMER (VIEW-TM)
↓ FRENCH LANGUAGE (FRENCH)
↓ EZ SETUP / AUTOPRESET (EZ-SETUP)
↓ WHITE TEMP OR FAVORITE COLOR (W-TEMP)
↓ AV ENABLED OR DISABLED (AV)
↓ AV2 ENABLED OR DISABLED (AV2)
↓ DYNAMIC SKIN CONTROL (DSK)
↓ RATIO PRE- AND OVERSHOOT BIT 0 (RPO0)
↓ RATIO PRE- AND OVERSHOOT BIT 1 (RPO1)
↓ GAIN FM DEMODULATOR (AGN)
↓ AUTO SWITCH OFF ENABLED (AUTO-OFF)

FORWARD : CH DOWN KEY
REVERSE : CH UP KEY
( ) means OSD display.

Figure B: ADJUSTMENT CATEGORIES

①Press the CH DOWN/UP key on the remote controller to get ready to select the mode one by one.
②Press the CH DOWN/UP key on the remote controller to select the modes reversibly one by one.
③Using the VOLUME UP/DOWN key on the remote controller, the data can be modified.
(OSD disturbance can be erased by R/C display key)

SERVICE MODE

SERVICE POSITION	ADJUST ITEM	DATA			REMARK
		RANGE	INITIAL VALUE	FIX/ADJ	
AGC	AGC TAKE OVER POINT	0~63	14	ADJ	
V-LIN	VERTICAL SLOPE	0~63	32	ADJ	
V-AMP	VERTICAL AMP	0~63	32	ADJ	
V-CENT	VERTICAL SHIFT	0~63	32	ADJ	
V-ZOOM	VERTICAL ZOOM	0~63	32	FIX	
H-CENT	HORIZONTAL SHIFT	0~63	32	ADJ	
H-SIZE	EAST-WEST WIDTH	0~63	32	FIX	
EW//	HORIZONTAL PARALLELOGRAM	0~63	32	FIX	
PARA	EAST-WEST PARABOLA / WIDTH	0~63	32	FIX	
COR(U)	EAST-WEST UPPER CORNER PARABOLA	0~63	32	FIX	
COR(L)	EAST-WEST LOWER CORNER PARABOLA	0~63	32	FIX	
TRAPE	EAST-WEST TRAPEZIUM	0~63	32	FIX	
HB	HORIZONTAL BOW	0~63	32	FIX	
S-COR	S-CORRECTION	0~63	0	FIX	must be "17"
DRI-R-HI	“W,P RED OFFSET HIGH / OFFSET BLUE TONE”	0~63	32	FIX	must be "32"
DRI-G-HI	W.P. GREEN OFFSET HIGH / OFFSET BLUE TONE	0~63	32	FIX	must be "33"
DRI-B-HI	W.P.BLUE OFFSET HIGH / OFFSET BLUE TONE	0~63	32	FIX	must be "37"
DRI-R-MH	W.P. RED MH / STD	0~63	25	FIX	must be "32"
DRI-G-MH	W.P. GREEN MH / STD	0~63	25	ADJ	
DRI-B-MH	W.P. BLUE MH / STD	0~63	25	ADJ	
DRI-R-ML	W.P. RED OFFSET ML / OFFSET RED TONE	0~63	32	FIX	must be "32"
DRI-G-ML	W.P. GREEN OFFSET ML / OFFSET RED TONE	0~63	32	FIX	must be "32"
DRI-B-ML	W.P. BLUE OFFSET ML / OFFSET RED TONE	0~63	32	FIX	must be "25"
DRI-R-LO	W.P. RED OFFSET LOW	0~63	32	FIX	must be "32"
DRI-G-LO	W.P. GREEN OFFSET LOW	0~63	32	FIX	must be "22"
DRI-B-LO	W.P. BLUE OFFSET LOW	0~63	32	FIX	must be "19"
SUB-VOL	MAX VOLUME	0~63	63	FIX	must be "63"
SUB-CON	SUB CONTRAST	0~63	63	FIX	must be "54"
SUB-COL	SUB COLOUR	0~63	32	ADJ	
SUB-BRI	SUB BRIGHTNESS	0~63	32	ADJ	
SUB-TINT	SUB TINT	0~63	32	ADJ	
SUB-SHP	SUB SHARPNESS	0~63	32	FIX	must be "27"
HTL-VOL	MAX HOTEL VOLUME	0~63	32	FIX	
HTL-PRG	HOTEL PROGRAM NO	0~125 or >125 for none	255	FIX	
BB-CON	BLUE BACK CONTRAST	0~15	10	FIX	must be "5"
RGB	OSD GRB REFERENCE	0~15	15	FIX	must be "5"
CUT-R	BLACK LEVEL OFFSET R	0~63	32	ADJ	
CUT-G	BLACK LEVEL OFFSET G	0~63	32	ADJ	
CDL	CATHODE DRIVE LEVEL	0~15	0	FIX	must be "4"
DL-TV	Y-D TIME (TV) [YD]	0~15	12	FIX	must be "2"
DL-AV	Y-D TIME (AV) [YD]	0~15	12	FIX	must be "8"
INIT	INITIAL/DEFAULT LANGUAGE	0(English), 1(Spanish), 2(French)	0	FIX	must be "1"
FAO-VOL	FAO-MAX VOLUME	0~63	63	FIX	must be "63"
ESV_OFFS	ENERGY SAVE OFFSET	0~63	10	FIX	must be "32"
CCPOS	CLOSE CAPTION POSITION	0~255	32	ADJ	
ATT	ATTENUATE INPUT SIGNAL LEVEL	0~15	10	FIX*	
VCO	VCO FREE RUNNING FREQUENCY ADJ.	0~63	32	FIX*	
FILTER	“STEREO, SAP, DBX FILTER ADJ. “	0~63	28	FIX*	
SPECTRAL	STEREO SEPARATION ADJUSTMENT (3kHZ)	0~63	27	FIX*	
BASS	BASS LEVEL	0 - 15	0	FIX	must be "8"
TREBLE	TREBLE LEVEL	0 - 15	0	FIX	must be "8"
VSD	VERTICAL SCAN DISABLE	0 or 1 when item selected	0	FIX	
BKS	BLACK STRETCH	0(disable) or1(enable)	1	FIX	
AVL	AUTOMATIC VOLUME LEVELLING	0(disable) or1(enable)	1	FIX	
FFI	FAST FILTER IF-PLL	0(disable) or1(enable)	0	FIX	
EVG	ENABLE VERTICAL GUARD	0(disable) or1(enable)	1	FIX	must be "0"
EHT	EHT TRACKING MODE	0(disable) or1(enable)	1	FIX	
OSO	OVERSCAN SWITCH OFF	0(disable) or1(enable)	0	FIX	
ACL	AUTO COLOUR LIMIT	0(disable) or1(enable)	0	FIX	must be "1"
FCO	FORCED COLOUR-ON	0(disable) or1(enable)	0	FIX	
VMI	VIDEO MUTE AT IDENT LOSS	0(disable) or1(enable)	1	FIX	
VMC	VIDEO MUTE AT PROGRAM/SOURCE CHANGE	0(disable) or1(enable)	1	FIX	
HTL	HOTEL MODE	0(disable) or1(enable)	0	FIX	
BTSC	GAIN FM DEMODULATOR	0(disable) or1(enable)	0	FIX	
CP	CHARGE PUMP	0(fast tuning) or 1 (moderate speed tuning)	0	FIX	

Table - A

SERVICE POSITION	ADJUST ITEM	DATA			REMARK
		RANGE	INITIAL VALUE	FIX/ADJ	
FMWS	FM WINDOW SELECTION	0(disable) or1(enable)	0	FIX	
SM0	SOUND MUTE BIT 0 (SM0)	0(disable) or1(enable)	1	FIX	
SM1	SOUND MUTE BIT 1	0(disable) or1(enable)	0	FIX	
AGC0	IF AGC SPEED BIT 0	0(disable) or1(enable)	1	FIX	
AGC1	IF AGC SPEED BIT 1	0(disable) or1(enable)	0	FIX	
FOA-FE	PHI 1 TIME CONSTANT FOR FE	0(disable) or1(enable)	0	FIX	
FOB-FE	PHI 1 TIME CONSTANT FOR FE	0(disable) or1(enable)	0	FIX	
FOA-AV	PHI 1 TIME CONSTANT FOR AV	0(disable) or1(enable)	1	FIX	
FOB-AV	PHI 1 TIME CONSTANT FOR AV	0(disable) or1(enable)	1	FIX	
FSL	FORCED SLICING LEVEL FOR VERTICAL SYNC.	0(disable) or1(enable)	0	FIX	
HP2	SYNCHRONISATION OF OSD/TEXT DISPLAY	0(disable) or1(enable)	0	FIX	
RGBL	RGB BLANK	0(disable) or1(enable)	0	FIX	
V-CHIP	V-CHIP	0(disable) or1(enable)	0	FIX	
DEMO	DEMO MODE	0(disable) or1(enable)	1	FIX	must be "0"
CLOCK	REAL TIME CLOCK / ON TIMER	0(disable) or1(enable)	1	FIX	must be "1"
E-SAVE	ENERGY SAVE	0(disable) or1(enable)	1	FIX	
P_PREF	PERSONAL PREFERENCE PROGRAM	0(disable) or1(enable)	0	FIX	
UNIV+	UNIVERSAL PLUS	0(disable) or1(enable)	0	FIX	
SPEAKER	SPEAKER ON/OFF	0(disable) or1(enable)	0	FIX	
FAO	FIXED AUDIO OUT	0(disable) or1(enable)	0	FIX	
VIEW-TM	VIEW TIMER	0(disable) or1(enable)	1	FIX	must be "1"
FRENCH	FRENCH LANGUAGE	0(disable) or1(enable)	0	FIX	must be "1"
EZ-SETUP	EZ SETUP / AUTOPRESET	0(AUTOPRESET) or 1(EZ SETUP)	1	FIX	must be "0"
W-TEMP	WHITE TEMP OR FAVORITE COLOR	0(FC) or 1(WT)	0	FIX	
AV	AV ENABLED OR DISABLED	0(without ext. source) or 1(with external source)	0	FIX	must be "1"
AV2	AV2 ENABLED OR DISABLED	0(1 input) or 1(2 input)	0	FIX*	
DSK	DYNAMIC SKIN CONTROL	0(disable) or1(enable)	0	FIX	
RPO0	RATIO PRE- AND OVERSHOOT BIT 0	0(disable) or1(enable)	0	FIX	
RPO1	RATIO PRE- AND OVERSHOOT BIT 1	0(disable) or1(enable)	0	FIX	
AGN	GAIN FM DEMODULATOR	0(normal) or1(+6dB)	0	FIX	
AUTO-OFF	AUTO SWITCH OFF ENABLED	0(disable) or1(enable)	1	FIX	
PON-CH		0(disable) or1(enable)	0	FIX	

Table - A

Holding down to short JA137 & JA138 and turn on the main power SW will automatically write the initial values into IC1003.
This is only can done when a new EEPROM is used. (Judge with the first 4 bytes.)

PART REPLACED	ADJUSTMENT		NOTES
	NECESSARY	UNNECESSARY	
IC801		X	Data is stored in IC1003.
IC1003	X		Holding down to short JA137 & JA138 and turn on the main power SW will automatically write the initial values into IC1003. This is only can done when a new EEPROM is used. (Judge with the first 4 bytes.)
CRT	X		Adjust items related to picture tube only.

Table - B

■ SERVICE ADJUSTMENT

VCO Adjustment

1. Connect a digital voltmeter between pin (44) of IC201 and ground.
2. Receive a good local channel.
3. Enter the service mode and select the service adjustment "S10".
4. Adjust the data so that digital voltmeter reads 2.2V.
5. Adjustment is completed, remove the voltmeter, return to "normal" mode.

RF AGC Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S08".
3. Set the data value to point where no noise or beat appears.
4. Select another channel to confirm that no noise or beat appears.
   Note 1: You will have to come out of the service mode to select another channel.
   Note 2: Setting the data to "00" will produce a black raster.

Screen Adjustment

1. Connect a digital voltmeter between TP852 and TP853 on the CRT Unit.
   Note: These test points may not be provided. Then connect the voltmeter to both ends of R852 located near Q852 on the foil side.
2. Receive a good local channel.
3. Enter the service mode and select the service adjustment "S03" and set the data value to "00" to set the color level to minimum. (Record original data code under adjustment "S03" before changing) You may skip this step, if you selected a B/W picture or monoscope pattern.
4. Select the service adjustment "S19" and adjust the data value to "01", this turn off the luminance signal (Y-mute).
5. Select the service adjustment "S04" and adjust data value to obtain 0.17 volts on the digital voltmeter.
6. Adjust the master screen cotrol until the raster darkens to the point where raster is barely seen.
7. Adjust the service adjustments "S11" red, "S12" green and "S13" blue to obtain a good grey scale with normal whites at low brightness level.
8. Select the service adjustment "S19" and reset data to "00". Select the service adjustment "S03" and reset data to obtain normal color level.
9. Remove digital voltmeter, and reset the master screen control to obtain normal brightness range.

White Balance Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S03" and set to "00" (minimum color)(Record original data code under adjustment "S03" before changing). "S03" does not have to be adjusted, if you selected a B/W picture or monoscope pattern.
3. Alternately adjust the service adjustment data of "S14" and "S15" until a good grey scale with normal whites is obtained.
4. Select the service adjustment "S03" and adjust data to obtain normal color level.

Sub-Picture Adjustment

1. Receive a good local channel.
2. Make sure the customer picture control is set to maximum.
3. Enter the service mode and select the service adjustment "S01".
4. Adjust the data value to achieve normal contrast range.

Sub-Tint Adjustment

1. Receive a good local channel.
2. Set customer tint control to center of it's range.
3. Enter the service mode and select the service adjustment "S02".
4. Adjust "S02" data value to obtain normal flesh tones.

Sub-Color Adjustment

1. Receive a good local channel.
2. Make sure the customer color control is set to center position .
3. Enter the service mode and select service adjustment "S03".
4. Adjust "S03" data value to obtain normal color level.

DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted. (K=kΩ=1000Ω, M=MΩ)*
2. *All resistors are 1/10 watt, unless otherwise noted.*
3. *All capacitors are μF, unless otherwise noted. (P=pF=μμF)*
4. *(G) indicates ±2% tolerance may be used.*
5. *⏚ indicates line isolated ground.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μ V B & W or Color signal.*

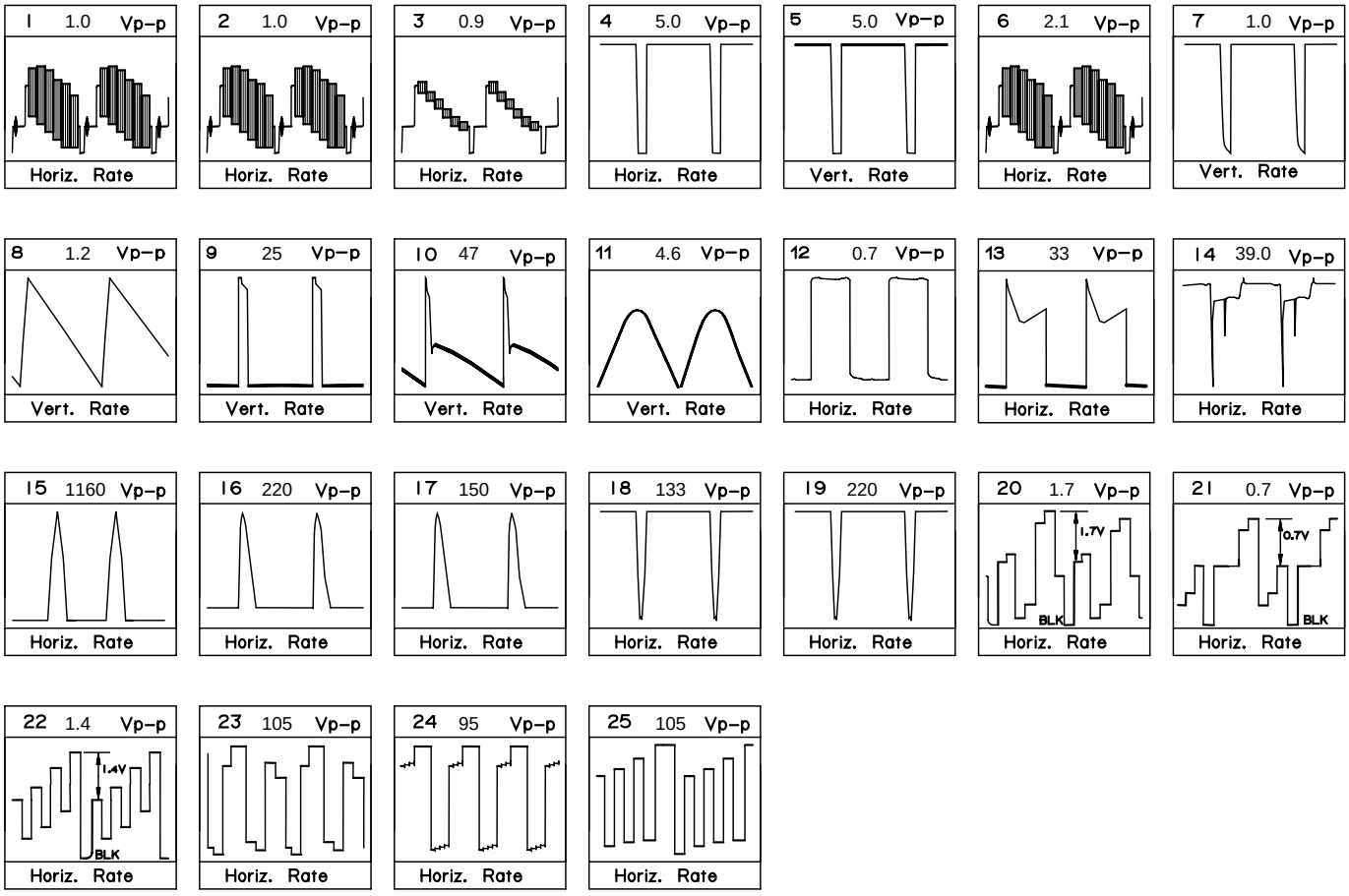
WAVEFORM MEASUREMENT CONDITIONS:

1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. *◯▶ indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

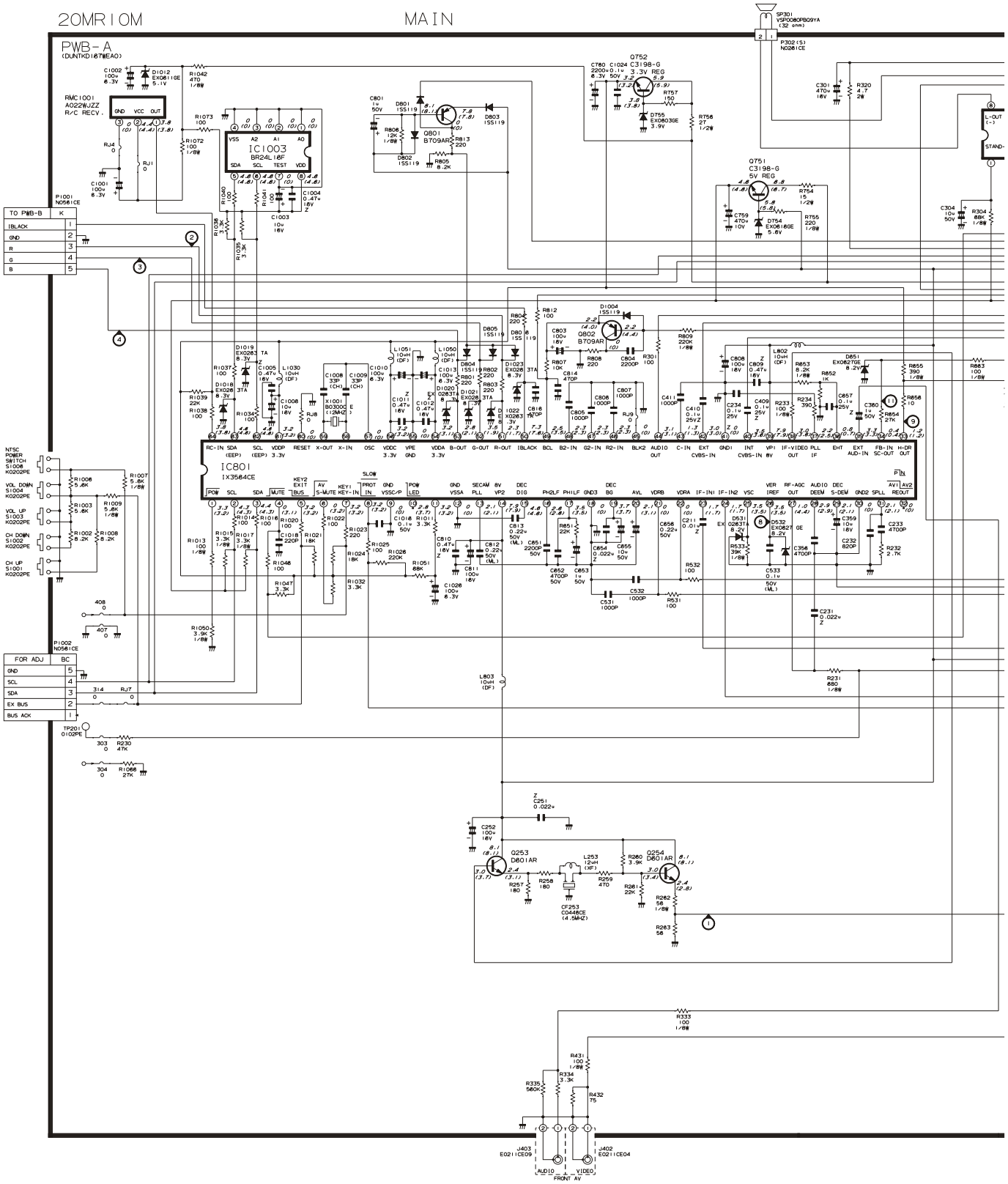
⚠ ***AND SHADED ( ) COMPONENTS = SAFETY RELATED PARTS.***
▲ ***MARK= X-RAY RELATED PARTS.***

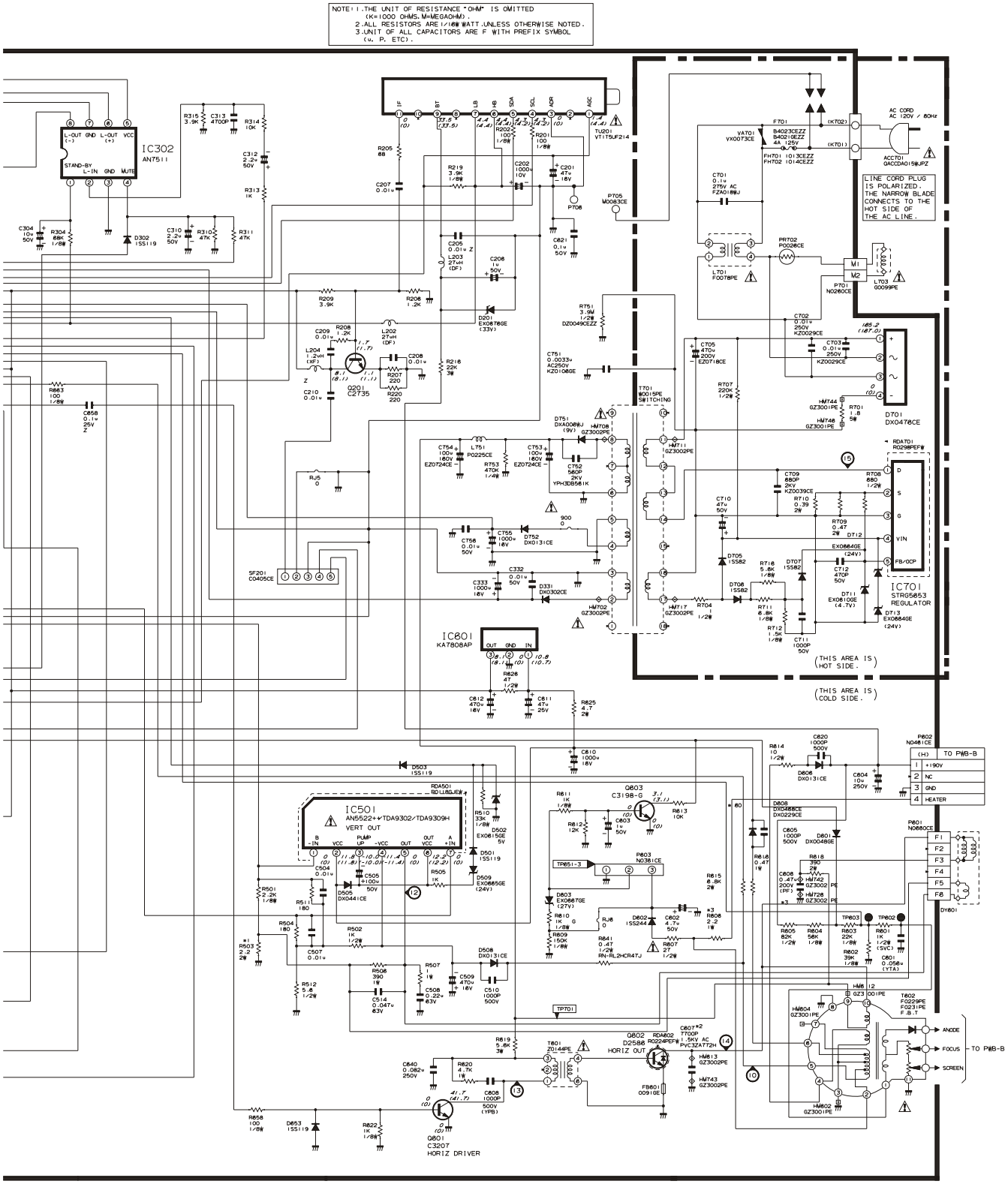
This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

WAVEFORMS



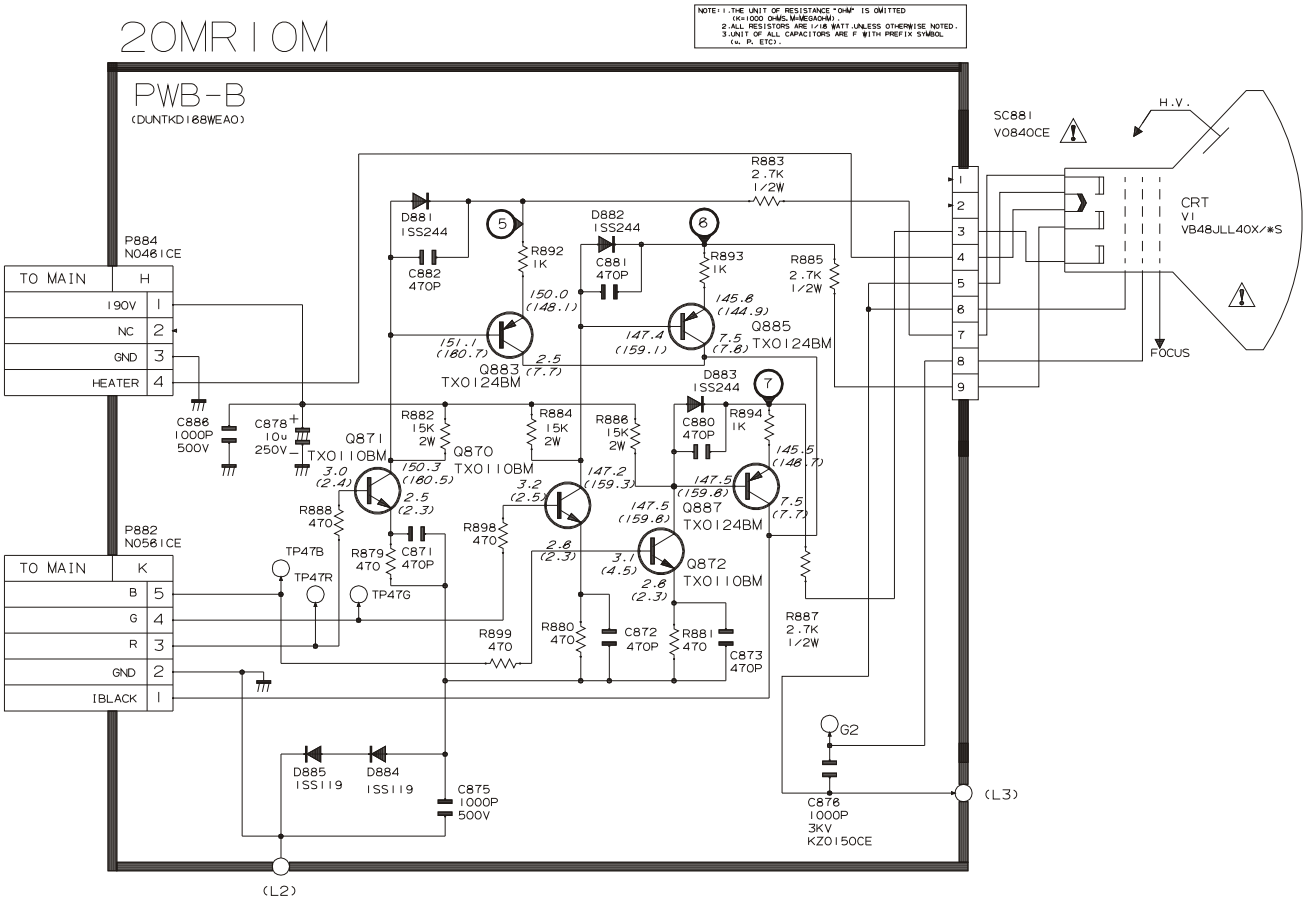
SCHEMATIC DIAGRAM: MAIN-1 Unit





10	11	12	13	14	15	16	17	18	19

SCHEMATIC DIAGRAM: CRT Unit



PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which dose no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

« MARK: SPARE PARTS-DELIVERY SECTION

p **MARK: X-RAY RELATED PARTS**

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

▲	⚠	V101	VB48JLL40X/*S	X	Picture Tube	BV
	⚠	DY601	RCILH0105GJZZ	X	DY	AT
	⚠	L702	RCILG0099PEZZ	X	Degaussing Coil	AK
			QEARC2016PEZZ	X	Grounding Strap	AE
			PMAGF3045CEZZ	X	Purity Magnet	AD

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

PWB-A	DUNTKD167WEA0	—	MAIN Unit	—
PWB-B	DUNTKD168WEA0	—	CRT Unit	—

Ref. No.	Part No.	★	Description	Code

PWB-A: DUNTKD167WEA0

MAIN UNIT

TUNER

NOTE:THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDETLY

⚠	TU201	VTUVT1T5UF214	X	Tuner		AR

INTEGRATED CIRCUITS

	IC302	VHIAN7511//-1	X	AN7511		AE
⚠	IC501	VHIAN5522++-1	X	An5522		AF
⚠	IC601	VHIKA7808AP-1	X	KIA7808API		AD
⚠	IC701	VHISTRG5653-1	X	STRG5653		AL
⚠	IC801	RH-IX3564CEN5	X	IX3564CE		AW
	IC1003	VHIBR24L16F-1Y	X	BR24L16F		AE

TRANSISTORS

	Q201	VS2SC2735//1EY	X	2SC2735		AB
	Q253	VS2SD601AR/-1Y	X	2SD601AR		AA
	Q254	VS2SD601AR/-1Y	X	2SD601AR		AA
⚠	Q601	VS2SC3207//-1+	X	2SC3207-AT		AC
	Q603	VS2SC3198-G-1+	X	2SC3198-G		AB
	Q751	VS2SC3198-G-1+	X	2SC3198-G		AB
	Q752	VS2SC3198-G-1+	X	2SC3198-G		AB
	Q801	VS2SB709AR/-1Y	X	2SB709AR		AA
	Q802	VS2SB709AR/-1Y	X	2SB709AR		AA
		VS2SD2586//1E	X	TRANSISTOR		AG

DIODES

	D201	RH-EX0676GEZZY	X	Zener	Diode 32V	AB
	D302	VHD1SS119//-1Y	X	Diode		AA
	D331	RH-DX0302CEZZY	X	Diode		AB
	D501	VHD1SS119//-1Y	X	Diode		AA
	D502	RH-EX0615GEZZY	X	Zener	Diode, 5.6V	AB
	D503	VHD1SS119//-1Y	X	Diode		AA
	D505	RH-DX0441CEZZY	X	Diode		AA
	D508	RH-DX0131CEZZY	X	Diode		AB
	D509	RH-EX0665GEZZY	X	Zener	Diode, 5V	AB
	D531	RH-EX0263TAZZY	X	EX0263TA		AB
	D532	RH-EX0627GEZZY	X	Zener	Diode, 8.2V	AB
	D601	RH-DX0048GEZZY	X	DX0048GE		AA
	D602	VHD1SS244//-1Y	X	Diode		AA
	D603	RH-EX0667GEZZY	X	Zener	Diode 27V	AB
	D606	RH-DX0131CEZZY	X	Diode		AB
	D608	RH-DX0468CEZZ	X	Diode		AD
	D651	RH-EX0627GEZZY	X	Zener	Diode, 8.2V	AB
	D653	VHD1SS119//-1Y	X	Diode		AA
	D701	RH-DX0476CEZZ	X	Diode		AE
	D705	VHD1SS82///1AY	X	Diode		AB
	D706	VHD1SS82///1AY	X	Diode		AB
	D707	VHD1SS82///1AY	X	Diode		AB
	D711	RH-EX0610GEZZY	X	Zener	Diode 4.93V	AB
	D712	RH-EX0664GEZZY	X	Zener	Diode 4.93V	AB
	D713	RH-EX0664GEZZY	X	Zener	Diode 4.93V	AB
	D751	RH-DXA006WJZZ	X	Diode		AC
	D752	RH-DX0131CEZZY	X	Diode		AB
	D754	RH-EX0616GEZZY	X	Zener	Diode 5.6V	AB
	D755	RH-EX0603GEZZY	X	Zener	Diode, 3.9V	AB
	D801	VHD1SS119//-1Y	X	Diode		AA
	D802	VHD1SS119//-1Y	X	Diode		AA
	D803	VHD1SS119//-1Y	X	Diode		AA
	D804	VHD1SS119//-1Y	X	Diode		AA
	D805	VHD1SS119//-1Y	X	Diode		AA
	D806	VHD1SS119//-1Y	X	Diode		AA
	D1004	VHD1SS119//-1Y	X	Diode		AA
	D1012	RH-EX0611GEZZY	X	Zener	Diode 5.1V	AB
	D1018	RH-EX0263TAZZY	X	EX0263TA		AB
	D1019	RH-EX0263TAZZY	X	EX0263TA		AB
	D1020	RH-EX0263TAZZY	X	EX0263TA		AB
	D1021	RH-EX0263TAZZY	X	EX0263TA		AB
	D1022	RH-EX0263TAZZY	X	EX0263TA		AB

PWB-A: DUNTKD167WEA0
MAIN UNIT

Ref. No.	Part No.	★	Description			Code
			DIODES			
D1023	RH-EX0263TAZZY	X	EX0263TA			AB
U VA701	RH-VX0073CEZZ	X	Varistor			AC
			PACKAGED CIRCUITS			
PR702	RMPTP0026CEZZ	X	Packaged Circuit			AD
X1001	RCRSB0300CEZZ	X	Crystal			AD
			FILTERS AND COILS			
CF253	RFILC0446CEZZ	X	Filter,FiLC0446CE			AC
L202	VP-DF270K0000Y	X	Peaking,27mH			AA
L203	VP-DF270K0000Y	X	Peaking,27mH			AA
L204	VP-XF1R2K0000Y	X	Peaking,1.2mH			AA
L253	VP-XF120K0000Y	X	Peaking,12mH			AA
L701	RCILF0078PEZZ	X	Coil Line Filter			AE
L751	RCILP0225CEZZ	X	Coil,			AC
L802	VP-DF100K0000Y	X	Peaking,10mH			AA
L803	VP-DF100K0000Y	X	Peaking,10mH			AA
L1030	VP-DF100K0000Y	X	Peaking,10mH			AA
L1050	VP-DF100K0000Y	X	Peaking,10mH			AA
L1051	VP-DF100K0000Y	X	Peaking,10mH			AA
SF201	RFILC0405CEZZ	X	Filter,(4.5MHZ)			AF
			TRANSFORMERS			
T601	RTRNZ0144PEZZ	X	Transformer			AD
T602	RTRNF0229PEZZ	X	H-Volt Transformer			AS
T701	RTRNW0015PEZZ	X	Transformer			AG
			CAPACITORS			
			[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]			
C201	VCEA0A1CW476M+	X	47	16V	EL.	AA
C202	VCEA0A1AW108M+	X	1000	10V	EL.	AB
C205	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C206	VCEA0A1HW105M+	X	1	50V	EL.	AA
C207	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C208	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C209	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C210	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C211	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C231	VCKYCY1HF223ZY	X	0.022	50V	Ceramic	AA
C232	VCKYCY1HB821KY	X	820p	50V	Ceramic	AA
C233	VCKYCY1HB472KY	X	100	35V	EL.	AA
C234	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C251	VCKYCY1HF223ZY	X	0.022	50V	Ceramic	AA
C252	VCEA0A1CW107M+	X	100	16V	EL.	AA
C301	VCEA0A1CW477M+	X	470	16V	EL.	AB
C304	VCEA0A1HW106M+	X	10	50V	EL.	AA
C310	VCEA0A1HW225M+	X	2.2	50V	EL.	AA
C312	VCEA0A1HW225M+	X	2.2	50V	EL.	AA
C313	VCKYCY1HB472KY	X	100	35V	EL.	AA
C332	VCQYTA1HM103J+	X	0.01	50V	Mylar	AA
C333	VCEA0A1CW108M+	X	1000	16V	EL.	AC
C356	VCKYCY1HB472KY	X	100	35V	EL.	AA
C359	VCEA0A1CW106M+	X	10	16V	EL.	AA
C360	VCE9GA1HW105M+	X	1	50V	EL.	AB
C409	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C410	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C411	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C504	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C505	VCEA0A1HW107M+	X	100	50V	EL.	AB
C507	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C508	VCFYSA1JB224J+	X	0.22	63V	Mylar	AC
C509	VCEA0A1CW477M+	X	470	16V	EL.	AB
C510	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
C514	VCFYSA1JB473J+	X	0.047	63V	Mylar	AB
C531	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C532	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C533	VCQYTA1HM104J+	X	0.1	50V	Mylar	AB
C601	VCQYTA1HM563J+	X	0.056	50V	Mylar	AA
C602	VCEA0A1HW475M+	X	4.7	50V	EL.	AA
C603	VCEA0A1HW105M+	X	1	50V	EL.	AA
C604	VCEA0A2EW106M+	X	10	250V	EL.	AC
C605	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
C606	VCFPVC2DB474J	X	0.47	200V	M-Poly.	AC
C607	VCFPVC3ZA772H	X	7700p	1.5kV	M-Poly.	AC
C608	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
C610	VCEA0A1CW108M+	X	1000	16V	EL.	AC
C611	VCEA0A1EW476M+	X	47	25V	EL.	AA
C612	VCEA0A1CW477M+	X	470	16V	EL.	AB
C620	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
C621	VCKYD41HB104KY	X	0.1	50V	Ceramic	
C640	VCFYSB2EB823J	X	0.082	250V	M.Poly..	AB
C651	VCQYTA1HM222J+	X	2200p	50V	Mylar	AA
C652	VCQYTA1HM472J+	X	4700p	50V	Mylar	AA
C653	VCEA0A1HW105M+	X	1	50V	EL.	AA
C654	VCKYCY1HF223ZY	X	0.022	50V	Ceramic	AA
C655	VCEA0A1HW106M+	X	10	50V	EL.	AA
C656	VCEA0A1HW224M+	X	0.22	50V	EL.	AA
C657	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C658	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C701	RC-FZA018WJZZ	X	0.1	AC275V	M.Poly.	AB
C702	RC-KZ0029CEZZ+	X	0.01	AC250V	Ceramic	AB
C703	RC-KZ0029CEZZ+	X	0.01	AC250V	Ceramic	AB
C705	RC-EZ0718CEZZ	X	470	200V	EL.	AG
C709	RC-KZ0039CEZZ	X	680	2kV	Ceramic	AB
C710	VCEA0A1HW476M+	X	47	50V	EL.	AB
C711	VCKYPA1HB102K+	X	1000p	50V	Ceramic	AA
C712	VCKYPA1HB471K+	X	470p	50V	Ceramic	AA
C751	RC-KZ0106GEZZ	X	3300p	AC250V	Ceramic	AC
C752	VCKYPH3DB561K	X	560p	2kV	Ceramic	AB
C753	RC-EZ0724CEZZ	X	100	160V	EL.	AD
C754	RC-EZ0724CEZZ	X	100	160V	EL.	AD
C755	VCEA0A1CW108M+	X	1000	16V	EL.	AC
C756	VCQYTA1HM103J+	X	0.01	50V	Mylar	AA
C759	VCEA0A1AW477M+	X	470	10V	EL.	AB
C760	VCEA0A0JW228M+	X	2200	6.3V	EL.	AC
C801	VCEA0A1HW105M+	X	1	50V	EL.	AA
C803	VCEA0A1CW107M+	X	100	16V	EL.	AA
C804	VCKYCY1HB222KY	X	2200p	50V	Ceramic	AA
C805	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C806	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C807	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C808	VCEA0A1CW107M+	X	100	16V	EL.	AA
C809	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C810	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C811	VCEA0A1CW107M+	X	100	16V	EL.	AA
C812	VCFYFA1HA224J+	X	0.22	50V	Mylar	AB
C813	VCFYFA1HA224J+	X	0.22	50V	Mylar	AB
C814	VCKYCY1HB471KY	X	470p	50V	Ceramic	AA
C816	VCKYCY1HB471KY	X	470p	50V	Ceramic	AA
C1001	VCEA0A0JW107M+	X	100	6.3V	EL.	AA
C1002	VCEA0A0JW107M+	X	100	6.3V	EL.	AA
C1003	VCEA0A1CW106M+	X	10	16V	EL.	AA
C1004	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C1005	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C1006	VCEA0A1CW106M+	X	10	16V	EL.	AA
C1008	VCCCCY1HH330JY	X	33p	50V	Ceramic	AA
C1009	VCCCCY1HH330JY	X	33p	50V	Ceramic	AA
C1010	VCEA0A0JW107M+	X	100	6.3V	EL.	AA
C1011	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C1012	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AA
C1013	VCEA0A0JW107M+	X	100	6.3V	EL.	AA
C1016	VCQYTA1HM104J+	X	0.1	50V	Mylar	AB
C1018	VCKYCY1HB221KY	X	220p	50V	Ceramic	AA
C1024	VCQYTA1HM104J+	X	0.1	50V	Mylar	AB
C1026	VCEA0A0JW107M+	X	100	6.3V	EL.	AA

PWB-A: DUNTKD167WEA0
MAIN UNIT

RESISTORS
[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

Ref. No.	Part No.	★	Description			Code
RJ1	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ4	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ5	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ6	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ7	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ8	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ9	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ13	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R201	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R202	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R205	VRS-CY1JF680JY	X	68	1/16W	M-Ox.	AA
R206	VRS-CY1JF122JY	X	1.2k	1/16W	M-Ox.	AA
R207	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R208	VRS-CY1JF122JY	X	1.2k	1/16W	M-Ox.	AA
R209	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R216	VRS-RG3LB223J+	X	22k	3W	M-Ox.	AB
R219	VRD-RA2BE392JY	X	3.9k	1/8W	Carbon	AA
R220	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R230	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R231	VRD-RA2BE681JY	X	1.5k	1/8W	Carbon	AA
R232	VRS-CY1JF272JY	X	2.7k	1/16W	M-Ox.	AA
R233	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R234	VRS-CY1JF391JY	X	390	1/16W	M-Ox.	AA
R257	VRS-CY1JF181JY	X	180	1/16W	M-Ox.	AA
R258	VRS-CY1JF181JY	X	180	1/16W	M-Ox.	AA
R259	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R260	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R261	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R262	VRD-RA2BE560JY	X	56	1/8W	Carbon	AA
R263	VRS-CY1JF560JY	X	56	1/16W	M-Ox.	AA
R301	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R304	VRD-RA2BE683JY	X	68k	1/8W	Carbon	AA
R310	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R311	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R313	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R314	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R315	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R320	VRN-RL3DB4R7J+	X	4.7	2W	M-Film	AB
R333	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R334	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R335	VRS-CY1JF564JY	X	560k	1/16W	M-Ox.	AA
R431	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R432	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R501	VRD-RA2BE222JY	X	2.2k	1/8W	Carbon	AA
R502	VRD-RM2HD102JY	X	1.0k	1/2W	Carbon	AA
R503	VRN-RL3DB2R2J+	X	2.2	2W	M-Film	AB
R504	VRS-CY1JF181JY	X	180	1/16W	M-Ox.	AA
R505	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R506	VRS-RG3AB391J+	X	390	1W	M-Ox.	AB
R507	VRN-RL3AB1R0J+	X	1.0	1W	M-Film	AB
R510	VRD-RA2BE333JY	X	33k	1/8W	Carbon	AA
R511	VRS-CY1JF181JY	X	180	1/16W	M-Ox.	AA
R512	VRD-RM2HD5R6JY	X	5.6	1/2W	Carbon	AA
R531	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R532	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R533	VRD-RA2BE393JY	X	39k	1/8W	Carbon	AA
R601	VRS-RG2HC102J+	X	1k	1/2W	M-Ox.	AB
R602	VRD-RA2BE393JY	X	39k	1/8W	Carbon	AA
R603	VRD-RA2BE223JY	X	22k	1/8W	Carbon	AA
R604	VRD-RA2BE563JY	X	56k	1/8W	Carbon	AA
R605	VRD-RM2HD823JY	X	82k	1/2W	Carbon	AA
R606	VRN-RL3AB2R2J+	X	2.2	1W	M-Film	AB
R607	VRD-RM2HD270JY	X	27	1/2W	Carbon	AA
R609	VRD-RA2BE154JY	X	150k	1/8W	Carbon	AA
R610	VRD-RA2BE102GY	X	1.0k	1/8W	Carbon	AA
R611	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R612	VRS-CY1JF123JY	X	12k	1/16W	M-Ox.	AA
R613	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R614	VRS-RG2HC100J+	X	10	1/2W	M-Ox.	AB
R615	VRS-RG3DB682J+	X	6.8k	2W	M-Ox.	AB
R616	VRN-RL3ABR47J+	X	0.47	1W	M-Film	AB
R618	VRS-RG3DB391J+	X	390	2W	M-Ox.	AB
R619	VRS-RG3LB562J+	X	5.6k	3W	M-Ox.	AB
R620	VRS-RG3AB472J+	X	4.7k	1W	M-Ox.	AB
R622	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R625	VRN-RL3DB4R7J+	X	4.7	2W	M-Film	AB
R626	VRD-RM2HD470JY	X	47	1/2W	Carbon	AA
R641	VRN-RL2HCR47J+	X	0.47	1/2W	M-Film	AB
R651	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R652	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R653	VRD-RA2BE822JY	X	8.2k	1/8W	Carbon	AA
R654	VRS-CY1JF273JY	X	27k	1/16W	M-Ox.	AA
R655	VRD-RA2BE391JY	X	390	1/8W	Carbon	AA
R656	VRS-CY1JF100JY	X	10	1/16W	M-Ox.	AA
R658	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R663	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R701	VRW-KP3HC1R8K	X	1.8	5W	Cement	AC
R704	VRN-SV2HC1R0J	X	1.0	1/2W	M-Film	AA
R707	VRD-RM2HD224JY	X	220k	1/2W	Carbon	AA
R708	VRD-RM2HD681JY	X	680	1/2W	Carbon	AA
R709	VRN-RL3DBR47J+	X	0.47	2W	M-Film	AB
R710	VRN-RL3DBR39J+	X	0.39	2W	M-Film	AB
R711	VRD-RA2BE682JY	X	6.8k	1/8W	Carbon	AA
R712	VRD-RA2BE152JY	X	1.5k	1/8W	Carbon	AA
R716	VRD-RA2BE562JY	X	5.6k	1/8W	Carbon	AA
R751	RR-DZ0049CEZZY	X	3.9M	1/2W	Solid	AB
R753	VRD-RA2EE474JY	X	470K	1/4W	Carbon	AA
R754	VRD-RM2HD150JY	X	15	1/2W	Carbon	AA
R755	VRD-RA2BE221JY	X	220	1/8W	Carbon	AA
R756	VRD-RM2HD270JY	X	27	1/2W	Carbon	AA
R757	VRS-CY1JF151JY	X	150	1/16W	M-Ox.	AA
R801	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R802	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R803	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R804	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R805	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R806	VRD-RA2BE123JY	X	12k	1/8W	Carbon	AA
R807	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R808	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R809	VRD-RA2BE224JY	X	220k	1/8W	M-Ox.	AA
R812	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R813	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1002	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R1003	VRS-CY1JF562JY	X	5.6k	1/16W	M-Ox.	AA
R1006	VRS-CY1JF562JY	X	5.6k	1/16W	M-Ox.	AA
R1007	VRD-RA2BE562JY	X	5.6k	1/8W	Carbon	AA
R1008	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R1009	VRD-RA2BE562JY	X	5.6k	1/8W	Carbon	AA
R1011	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R1013	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R1014	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1015	VRD-RA2BE332JY	X	3.3k	1/8W	Carbon	AA
R1016	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1017	VRD-RA2BE332JY	X	3.3k	1/8W	Carbon	AA
R1020	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1021	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1022	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1023	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1024	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1025	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1026	VRS-CY1JF224JY	X	220k	1/16W	M-Ox.	AA

PWB-A: DUNTKD167WEA0
MAIN UNIT

Ref. No.	Part No.	★	Description			Code
			RESISTORS			
			[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]			
R1032	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R1034	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1035	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R1036	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R1037	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1038	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1039	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R1040	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1041	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1042	VRD-RA2BE471JY	X	470	1/8W	Carbon	AA
R1046	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1047	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R1050	VRD-RA2BE392JY	X	3.9k	1/8W	Carbon	AA
R1051	VRS-CY1JF683JY	X	68k	1/16W	M-Ox.	AA
R1066	VRS-CY1JF273JY	X	27k	1/16W	M-Ox.	AA
R1072	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R1073	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
			SWITCHES			
S1001	QSW-K0202PEZZ+	X	Switch,			AB
S1002	QSW-K0202PEZZ+	X	Switch,			AB
S1003	QSW-K0202PEZZ+	X	Switch,			AB
S1004	QSW-K0202PEZZ+	X	Switch,			AB
S1006	QSW-K0202PEZZ+	X	Switch,			AB
			MISCELLANEOUS PARTS			
⚠ F701	QFS-B4023CEZZ	X	FUSE - 4A 125V			AC
FB601	RBLN-0091GEZZY	X	Ferrite Bead			AA
FH701	QFSHD1013CEZZ+	X	FUSE CLIP			AA
FH702	QFSHD1014CEZZ+	X	FUSE CLIP			AA
			JACK (A/V)			
J402	QJAKE0211CE04	X	RCA Jack yellow			AB
J403	QJAKE0211CE09	X	RCA Jack white			AB
			PLUG			
P302	QPLGN0261CEZZ	X	plug (2 PINS)			AA
P601	QPLGN0660CEZZ	X	plug (6 pins)			AC
P602	QPLGN0461CEZZA	X	plug,4pin(S1-4)			AB
P603	QPLGN0361CEZZA	X	plug,3pin (TP651-3)			AB
P701	QPLGN0260CEZZ	X	plug 2pin(M1-2)			AB
P705	QTIPM0083CEZZ	X	Tip			AB
P1001	QPLGN0561CEZZA	X	plug 5Pin(KA)			AB
P1002	QPLGN0561CEZZA	X	plug 5Pin(KA)			AB
RMC1001	RRMCUA022WJZZ	X	R/C Receiver			AE
TP201	QLUGP0102PEZZ	X	Test point			AA

PWB-B: DUNTKD168WEA0
CRT UNIT

Ref. No.	Part No.	★	Description			Code
			TRANSISTORS			
Q870	RH-TX0110BMZZ+	X	TX0110BM			AB
Q871	RH-TX0110BMZZ+	X	TX0110BM			AB
Q872	RH-TX0110BMZZ+	X	TX0110BM			AB
Q883	RH-TX0124BMZZ+	X	TX0124BM			AB
Q885	RH-TX0124BMZZ+	X	TX0124BM			AB
Q887	RH-TX0124BMZZ+	X	TX0124BM			AB
			DIODES			
D881	VHD1SS244//-1Y	X	Diode			AA
D882	VHD1SS244//-1Y	X	Diode			AA
D883	VHD1SS244//-1Y	X	Diode			AA
D884	VHD1SS119//-1Y	X	Diode			AA
D885	VHD1SS119//-1Y	X	Diode			AA

Ref. No.	Part No.	★	Description			Code
			CAPACITORS			
			[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]			
C871	VCCSCY1HL471JY	X	470p	50V	Ceramic	AB
C872	VCCSCY1HL471JY	X	470p	50V	Ceramic	AB
C873	VCCSCY1HL471JY	X	470p	50V	Ceramic	AB
C875	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
C876	RC-KZ0150CEZZ	X	1000p	3kV	Ceramic	AB
C878	VCEA0A2EW106M+	X	10	250V	EL.	AC
C880	VCCSCY1HL471JY	X	470p	50V	Ceramic	AB
C881	VCKYPA1HB471K+	X	470p	50V	Ceramic	AA
C882	VCKYPA1HB471K+	X	470p	50V	Ceramic	AA
C886	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AA
			RESISTORS			
			[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]			
R879	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R880	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R881	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R882	VRS-VV3DB153J	X	15k	2W	M-Ox.	AA
R883	VRD-RM2HD272JY	X	2.7k	1/2W	Carbon	AA
R884	VRS-VV3DB153J	X	15k	2W	M-Ox.	AA
R885	VRD-RM2HD272JY	X	2.7k	1/2W	Carbon	AA
R886	VRS-VV3DB153J	X	15k	2W	M-Ox.	AA
R887	VRD-RM2HD272JY	X	2.7k	1/2W	Carbon	AA
R888	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R892	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R893	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R894	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R898	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R899	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
			MISCELLANEOUS PARTS			
P882	QPLGN0561CEZZA	X	plug 5Pin(KA)			AB
P884	QPLGN0461CEZZA	X	plug,4pin(S1-4)			AB
SC881	QSOCV0840CEZZ	X	SOCKET (CRT)			AD

MISCELLANEOUS PARTS

Ref. No.	Part No.	★	Description	Code
	QACCDA015WJPZ	X	AC Cord	AG
	VSP0080PBL4YS	X	speaker	AG
	QCNW-2111PEZZ	X	Wire (YBN)	AC
	QCNW-2112PEZZ	X	Wire (S)	AC
	QCNW-2160PEZZ	X	Wire (GBN)	AD
	TLABN0101GJZZ	X	Remark label(chassis ID)	AA
	LX-TZ0104GJFD	X	Screw (CRT)	AC
	LX-WZ0102GJFD	X	TV washer (1.01)	AB
	XTASD30P12000	X	Screw(BTN)	AA
	XTASD40P20000	X	Screw (Cab)	AA

SUPPLIED ACCESORRIES

Ref. No.	Part No.	★	Description	Code
	RRMCG1339CESB	X	Infrared R-C Unit	AM
	TINS-B821WJZZ	X	operation manual	AE
	TCAUS3000GJZZ	X	Caution label	AA

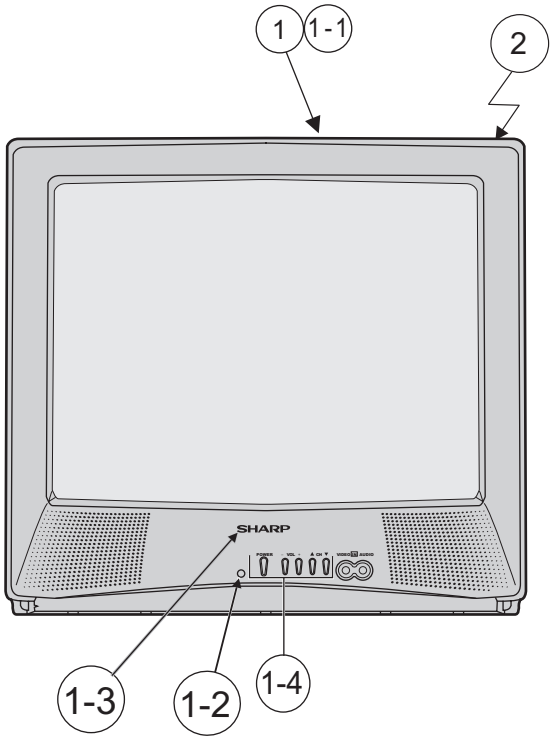
PACKING PARTS
(NOT REPLACEMENT ITEM)

Ref. No.	Part No.	★	Description	Code
	SPAKCB958WJZZ	X	Packing Case	AT
	SPAKP0102GJZZ	X	Lamifoam	AE
	SPAKX0003GJZZ	X	Packing Foam	AN
	SSAKA0101GJZZ	X	Plastic bag	AB

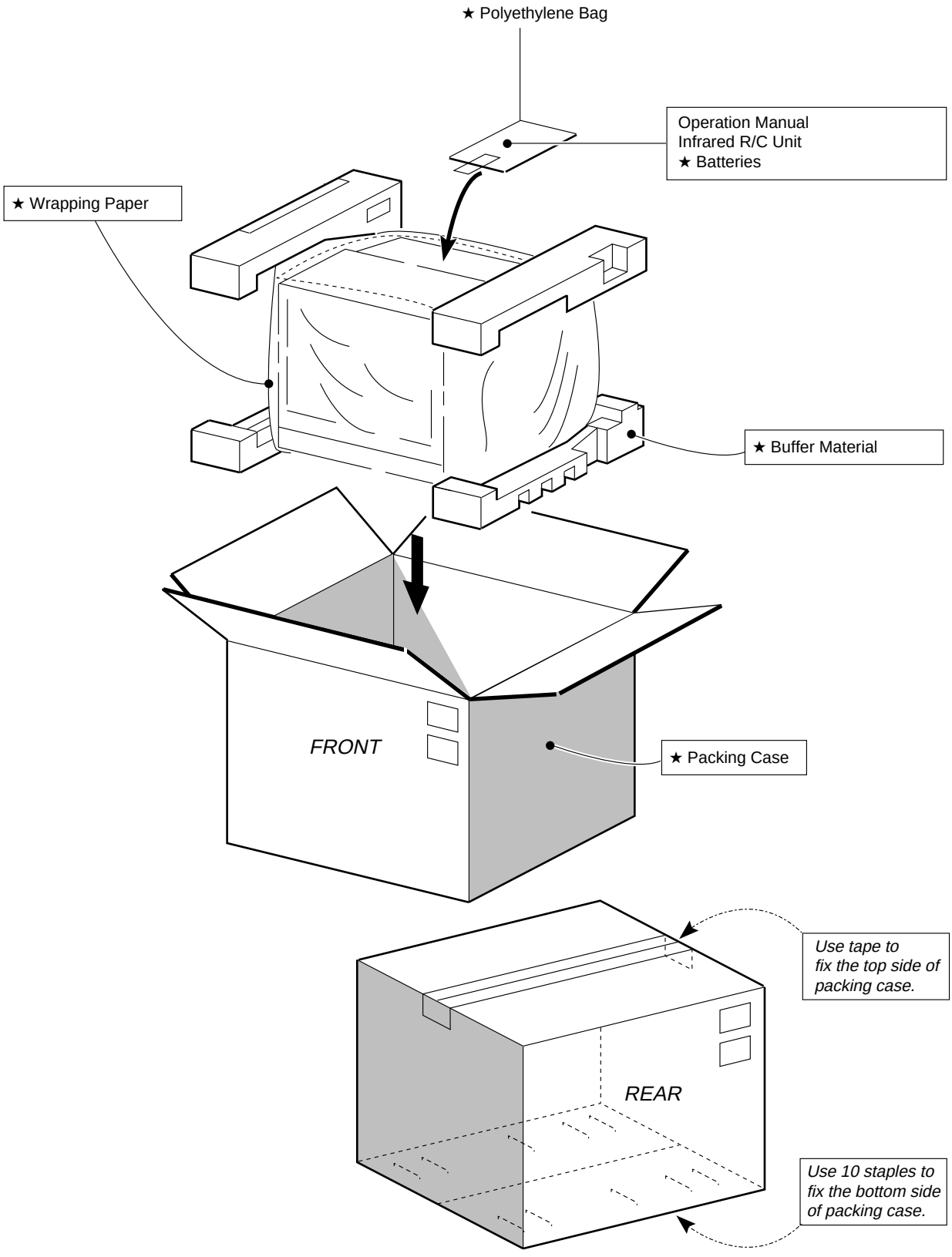
CABINET PARTS

Ref. No.	Part No.	★	Description	Code
1	CCABA0006WEH7	X	CAB-A ASSY	BB
1—1	Not Available	—	FRONT CABINET	
1-2	GCOVA0003GJSA	X	R/C COVER	AM
1-3	HBDGB1001GJSB	X	BADGE	AD
1-4	JBTN-0003GJSD	X	BUTTON Button(Power, Vol-up/down,CH-up/down)	AF
2	GCABB0109GJKA	X	REAR CABINET	AZ

CABINET PARTS LOCATION



PACKING OF THE SET



★ MARK : Not replacement items.

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